

Some deep-sea echiurans of the South-West Pacific

by Ramlall BISESWAR

Abstract. — This report contains descriptions of two species of deep-sea bonelliids (Family: Bonelliidae) of which one is new to science. This material results from the Lau Basin (22°33' S-176°43' W) in the South-West Pacific. A brief description of a single male bonelliid is also given but its true identity is uncertain as it was not found in association with any of the females.

Résumé. — Ce travail comprend les descriptions de deux espèces abyssales de Bonellides (famille des Bonelliidae), dont l'une est nouvelle pour la Science. Le matériel provient du Bassin de Lau (22°33' S-176°43' W) dans le Pacifique Sud-Ouest. Une courte description d'un unique exemplaire mâle de Bonellide est également donnée mais ce spécimen reste indéterminé car il n'a pas été trouvé en association avec des femelles.

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INTRODUCTION

The author received some deep-sea echiurans (Phylum: Echiura) through the courtesy of Dr Michel SEGONZAC, Chief of the Centre National de tri d'Océanographie Biologique (CENTOB, IFREMER, Brest), for the purpose of identification. These animals are part of a collection on a campaign that was undertaken to the Lau Basin (22°33' S-176°43' W) in the South-West Pacific, under Anne-Marie ALAYSE as chief scientist in May 1989. The main objective of this investigation was to study populations and micro-organisms of the hydrothermal zones of the basin and to describe the fauna and ecology.

The specimens were collected at the "Momoko site" located at some hundred meters in the south of the hydrothermal vent "Hine Hina" (22°32' S-176°43' W, 1832-1887 m). "The fluid temperature in this hydrothermal field is generally low and under 20°. The fluid is released through a dome of highly vesiculated and brecciated andesite... South of this site, lies an extensive field of brecciated rocks containing oxide deposits and bacterial mats. No thermal anomaly could be detected in this area (Momoko site)... The perviate pogonophoran *Siphonobrachia laui* and vestimentiferan worms *Lamellibrachia columna* live in these sites. One species of bivalve assigned to the genus *Acharax*, lives at the base of the vestimentiferan tubes... mussels and stalked cirripeds were also observed in these "cold" site" (DESBRUYÈRES *et al.*, 1993).

The green echiurian's trunk was partially visible above the sediment (crew observation).

The four female specimens in the collection belong to the family Bonelliidae and include two genera and two species of which one is new. The identity of a single male bonelliid is uncertain as it was not found in association with any of the females.

The holotype and paratype of *Hamingia pacifica* n. sp. are deposited in the Muséum national d'Histoire naturelle, Paris.

Hamingia pacifica n. sp.

(Plate 1 A-G)

MATERIAL : Holotype sexually mature female, Momoko field, Lau Basin, BL 07, south of station 1, n° UD 154, collected 18.V.1989 : type locality coordinates 22°33' S-176°43' W, depth 1914m. Paratype one sexually mature female, n° UD 155, date of collection and locality as for the holotype. Holotype and paratype dissected.

DESCRIPTION

Trunk and proboscis of preserved specimens are beige in colour. Both specimens are almost equal in size. Trunk is cylindrical (pl. 1 A), 21 mm in length and 8 mm at the broadest part. Proboscis of holotype is almost as long as the trunk, deeply bifurcate, and detached from stem distally (pl. 1 A, B). Proboscis of paratype is damaged at tip. Trunk is densely covered with rounded papillae, more closely aggregated at anterior and posterior ends. Integument is thick and opaque. Ventral setae one pair, 0.5 mm long, not visible externally. Each seta consists of a cylindrical shaft with a slightly curved and pointed terminal end (pl. 1 C). An interbasal muscle between the setae is absent. Genital openings located about 5 mm from anterior tip of trunk.

Internally, there is one pair of sac-like gonoducts (pl. 1 D) containing white eggs. Gonoducts open separately to exterior. In holotype left gonoduct is much smaller than the right one. Gonostome borne on a short stalk, basal in position, funnel-shaped with small lobes around margin. Ovary is located in middle region of trunk along ventral mesentery. In holotype alimentary canal has regenerated. Intestine is a straight tube with only a single coil just posterior to bulbous pharynx (pl. 1 E). Remnants of hindgut with intestinal siphon is still present. Dorsal and neurointestinal vessels are connected indirectly by capillaries in intestinal wall. Anal vesicles are two stout sacs covered with dense tubules terminating in ciliated funnels (pl. 1 F, G).

REMARKS

The genus *Hamingia* currently contains a single species, namely, *H. arctica* described originally by DANIELSSEN and KOREN (1881). The original description is brief but WESENBERG-LUND (1934, 1937) has given additional information about the species. Since its discovery it has been reported from numerous localities in the Arctic and was once recorded from the Antarctic (STEPHEN and EDMONDS, 1972). The description given by STEPHEN (1941) from a

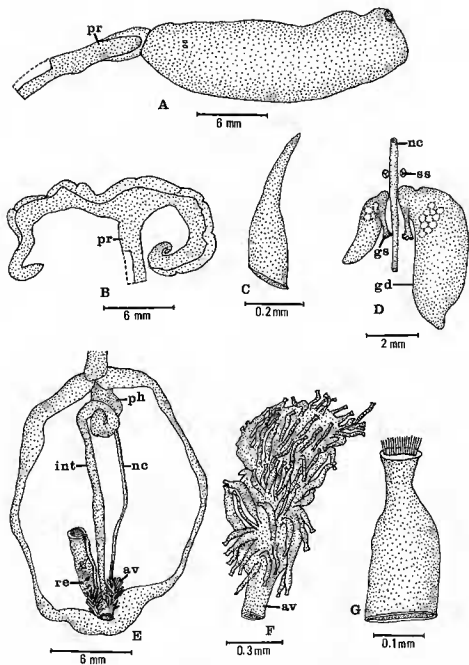


PLATE I. — *Hamingia pacifica* n. sp. : A, ventral view of female; B, proboscis; C, seta; D, gonoducts; E, internal morphology; F, anal vesicle; G, ciliated funnel.

av, anal vesicle; gd, gonoduct; gp, gonopore; gs, gonostome; int, intestine; nc, nerve cord; ph, pharynx; pr, proboscis; re, rectum; se, seta; ss, setal sac.

single specimen from the South Shetlands, mentions that the proboscis is bifid but the arms are much shorter than those figured by WESENBERG-LUND (1934).

The present specimens from the Pacific Ocean have been assigned to the genus *Hamingia* on the basis of the deeply forked proboscis and the presence of two gonoducts. The new species differs from *H. arctica* in possessing a pair of ventral setae. *Hamingia arctica* is also a much larger species as the trunk is up to 120 mm in length. The occurrence of the genus in the Pacific extends its range of distribution. Due to the presence of a pair of ventral setae in the new species, the generic diagnosis provided by STEPHEN and EDMONDS (1972) needs emendation.

Diagnostic features of the new species include the presence of a deeply bifurcate proboscis, a pair of ventral setae and two gonoducts with basally located gonostomes.

ETYMOLOGY : The species is named after its discovery in the Pacific Ocean.

Alomasoma chaetiferum Zenkevitch, 1958

(Plate 2 A-D)

MATERIAL : 2 sexually mature females, Momoko field, Lau Basin, BL 07, south of station 1, collected 18.V.1989, locality coordinates 22°33' S-176°43' W, depth 1914 m.

DESCRIPTION

Colour of proboscis and trunk is light brown in the preserved state. Trunk of the larger sexually mature female is 32 mm long and about 10 mm across broadest part (pl. 2 A). Only proximal 8 mm of proboscis is attached to trunk, distal part is missing. Proboscis is flat without a ventral groove. Lateral margins of proboscis are smooth and free at base. Trunk of smaller specimen is 26 mm in length with only the basal stump of proboscis still intact. Trunk covered with rounded papillae, more closely aggregated at posterior end. Ventral setae one pair, minute, each terminating in a pointed tip (pl. 2 B). An interbasal muscle is absent.

Internally, there is a single pair of tubular gonoducts (pl. 2 C) containing eggs in both specimens. Both gonoducts join under ventral nerve cord and open into a common duct. Gonostome funnel-shaped, basal in position, located on a small stalk ((pl. 2 C). Dorsal and neurointestinal vessels connect without a ring sinus. Anal vesicles are sac-like structures projecting from sides of rectum and bearing dense tubules terminating in ciliated funnels (pl. 2 D).

REMARKS

Three species are currently known in the genus *Alomasoma*, namely, *A. belyaevi*, *A. nordpacificum* and *A. chaetiferum*. All the specimens have been found at great depths. The species *A. chaetiferum* is based on two specimens from the Aleutian Trench at a depth of 7268 m. The present specimens approach the description given by ZENKEVITCH (1958) in many

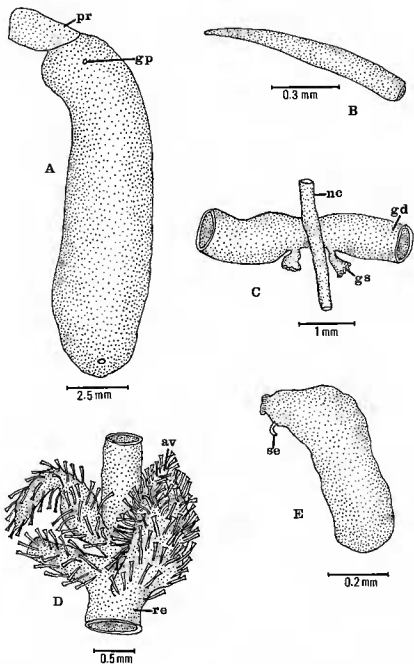


PLATE II. — A-D, *Alomasoma chaetiferum*: A, ventral view of female; B, seta, C, gonoducts; D, anal vesicles. — E, male bonellid.

(Abbreviations, see plate I.)

respects but differ in the structure of the anal vesicle. According to ZENKEVITCH (1958), the anal vesicles are broom-like with a great number of separate branches.

The discovery of *A. chaetiferum* in the Pacific at 22°S latitude extends its range of distribution from the Bering Sea.

BONELLID MALE

MATERIAL : One male, Momoko field, Lau Basin Bl 07, south of station 1, collected 18.V.1989 : locality coordinates 22°33' S-176°43' W depth 1914 m.

DESCRIPTION

Body cylindrical, 0.7 mm in length, rounded at posterior end (pl. 2E). Body not ciliated. Setae present. Vas deferens opens at the anterior end.

REMARKS

As the male was not found in association with any of the female specimens its identity is uncertain. However, as it came from the same collection it may well be a male of one of the species described.

Acknowledgements

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